Grammatical Uncertainty Implicatures and Hurford's Constraint

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Summary In this talk, I show that the infelicity of disjunctions in which one disjunct entails the other ("Hurford disjunctions"), as well as the felicity of a subclass of Hurford disjunctions (e.g., *some or all*), can be derived from a general principle of Brevity under the independently motivated assumption that uncertainty implicatures are generated in the grammar.

Background Hurford (1974) observed that disjunctions in which one disjunct (contextually) entails the other are infelicitous:

(1) # *Jeff got a job in France or in Paris*

Disjunctions like (1) have been ruled out by the constraint in (2) (cf. Gazdar 1979, Singh 2008, Chierchia, Fox & Spector (CFS) 2009):

(2) Hurford's Constraint
A disjunctive phrase [L or R] is infelicitous if L ⇒ R or R ⇒ L

However, Hurford's Constraint is not explanatory, but simply generalizes the observation from (1) above. Furthermore, felicitous Hurford disjunctions like (3) seem problematic for (2):

(3) ✓ Jeff drank some or all of the beers short: SOME or ALL

It has been argued by CFS (2009) that (3) does in fact obey Hurford's constraint because the first disjunct contains an embedded scalar implicature *not all*, derived by a covert exhaustivity operator *exh*. The propositional operator *exh* takes a set of formal alternatives $\mathcal{A}LT$ and a sentence S and adds to the meaning of S the negation of those $\mathcal{A}LT(S)$ which can be "innocently excluded" in the sense of Fox (2007). Given the availability of *exh*, Hurford's constraint requires the following structure for (3):

(4) $[_A\ [_{B'}\ exh\ [_B$ SOME]] or $[_C$ ALL]] $[\![A]\!] \equiv [\![B]\!]$

But the stipulative nature of (2) remains. Intuitively, it seems like (2) should be derived from Grice's maxim of Brevity – avoid structural complexity without semantic effects:

(5) Let S be a syntactic tree and let S' be a sub-constituent of S
#S if S is equivalent to S'

Unfortunately, (5) runs into problems with felicitous Hurford disjunctions like (3):[1] As shown in (4), the whole disjunction A is equivalent to its subtree B and therefore ruled out, as is any other structure for (3). Thus, felicitous Hurford disjunctions seem to obviate a more explanatory account of Hurford's constraint in terms of Brevity.

Proposal

I show that Hurford's constraint and its apparent exceptions can be derived from Brevity. My proposal has two essential ingredients. First, I will introduce and argue in favor of a grammatical theory of uncertainty implicatures. Under this theory, both epistemically weak implicatures (*the speaker is not sure that* ϕ) and epistemically strong

1 I show furthermore that (5) also has problems with sentences like *Jeff drank some but not all of the beers*, while the principle I suggest below does not rule out these disambiguation strategies.

implicatures (*the speaker is sure that* $\neg\phi$) are derived in the same way, though scopal interactions between the exhaustivity operator *exh* and a covert epistemic operator K which is attached at the matrix level (cf. Alonso-Ovalle & Menéndez-Benito 2010):

(6) $[\![K_x\phi]\!] = \lambda w.\ \forall w' \in \mathcal{D}ox(x)(w) :\ \phi(w')$
$w' \in \mathcal{D}ox(x)(w)$ *iff* given the beliefs of x in w, w' could be the actual world

The operator *exh* can attach above or below K. I propose that its distribution is guided by a principle of transparency:

(7) An LF of the form [... $K_x\phi$] is licensed iff it entails $K_x(\psi)$ or $\neg K_x(\psi)$ about every $\psi \in \mathcal{A}LT(\phi)$

(7) is a corollary of Grice's Quantity; as we will see, both [K *exh* S] and [*exh* K S] are semantically stronger than their counterparts without *exh*. Given the operators K and *exh* and the principle in (7) (3) can be mapped unto several LFs:[2]

(8) (LF1) *exh* K [[*exh* SOME] or ALL] (LF2) *exh* K [SOME or ALL]
(LF3) *exh* K [*exh* [SOME or ALL]] (LF4) K *exh* [SOME or ALL]

Secondly, I propose a formalization of Brevity which rules out all but the first LF – the empirically correct result. In doing so I make crucial use of Katzir's definition of structural complexity $\lesssim$ (cf. Katzir 2007):

(9) Brevity – Final Version
An LF ϕ is ruled out if there is a competitor ψ such that $\psi \lesssim \phi$ and $[\![\psi]\!] \equiv [\![\phi]\!]$

Roughly, $\psi \lesssim \phi$ means that ψ can be derived from ϕ by substitution and deletion as defined by Katzir (2007). My analysis predicts that LF1 is the only possible LF for (3):

(10) $[\![$*exh* [K [*exh* SOME] or [ALL]]$]\!]$=
K(SOME) & ¬ K(ALL) & ¬K(SOME & ¬ ALL)
= K(SOME) & ¬K(ALL) & ¬K¬(ALL)

The analysis also predicts that this reading cannot be expressed by any simpler structure (e.g., *exh* K [SOME]). I will present empirical arguments that this prediction is correct. Having derived LF1 as the only available parse for (3) without stipulating Hurford's constraint, I go on to show that (1) can be derived without Hurford's constraint too: Building on a proposal by Singh (2008), I show that all LFs licensed by (7) give rise to grammatical uncertainty implicatures which contradict common beliefs. The proposed theory thus also suggests a new perspective on under-informative sentences like # *Some Italians come from a warm country* (cf. Magri 2009), which can be accounted for without having to assume obligatory *scalar* implicatures.

Selected References Hurford, J. (1974): *Foundations of Language* 11. Gazdar, G. (1979): *Pragmatics: Implicatures, Presupposition and Logical Form*. Sauerland, U. (2004): *Linguist. and Philos.* 27. Chierchia, G. (2006): *Linguist. Inquiry* 37. Fox, D. (2007): In ed. Sauerland, U. & Stateva, P. Katzir, R. (2007): *Linguist. and Philos.* 30. Singh, R. (2008): *Linguist. and Philos.* 31. Chierchia, G. & Fox, D. & Spector, B. (2009): In *MITWPL 60*, ed. P. Egré & G. Magri. Magri, G. (2009): *Nat. Lang. Semantics* 17. Alonso-Ovalle, L. & Menéndez-Benito, P. (2010): *Nat. Lang. Semantics* 18.

2 As we will see, the additional LFs K [(*exh*) SOME or ALL] are ruled out by the principle in (7).